



SEQUENCE LISTING

<110> CREEMERS, Jantina
ANGENENT, Gerrit
KATER, Martin

<120> Process to collect metabolites from modified nectar by
insects

<130> U-13212-4

<140> 09/743885

<141> 2001-01-16

<160> 29

<170> PatentIn Ver. 2.1

<210> 1

<211> 265

<212> PRT

<213> Petunia x hybrida

<220>

<223> strain: W115

<220>

<223> tissue type: nectar gland

<220>

<223> NEC1 amino acid sequence

<400> 1

Met Ala Gln Leu Arg Ala Asp Asp Leu Ser Phe Ile Phe Gly Leu Leu
1 5 10 15

Gly Asn Ile Val Ser Phe Met Val Phe Leu Ala Pro Val Pro Thr Phe
20 25 30

Tyr Lys Ile Tyr Lys Arg Lys Ser Ser Glu Gly Tyr Gln Ala Ile Pro
35 40 45

Tyr Met Val Ala Leu Phe Ser Ala Gly Leu Leu Leu Tyr Tyr Ala Tyr
50 55 60

Leu Arg Lys Asn Ala Tyr Leu Ile Val Ser Ile Asn Gly Phe Gly Cys
65 70 75 80

Ala Ile Glu Leu Thr Tyr Ile Ser Leu Phe Leu Phe Tyr Ala Pro Arg
85 90 95

Lys Ser Lys Ile Phe Thr Gly Trp Leu Met Leu Leu Glu Leu Gly Ala
100 105 110

Leu Gly Met Val Met Pro Ile Thr Tyr Leu Leu Ala Glu Gly Ser His
115 120 125

Arg Val Met Ile Val Gly Trp Ile Cys Ala Ala Ile Asn Val Ala Val

130	135	140
Phe Ala Ala Pro Leu Ser Ile Met Arg Gln Val Ile Lys Thr Lys Ser		
145	150	155 160
Val Glu Phe Met Pro Phe Thr Leu Ser Leu Phe Leu Thr Leu Cys Ala		
	165	170 175
Thr Met Trp Phe Phe Tyr Gly Phe Phe Lys Lys Asp Phe Tyr Ile Ala		
	180	185 190
Phe Pro Asn Ile Leu Gly Phe Leu Phe Gly Ile Val Gln Met Leu Leu		
	195	200 205
Tyr Phe Val Tyr Lys Asp Ser Lys Arg Ile Asp Asp Glu Lys Ser Asp		
	210	215 220
Pro Val Arg Glu Ala Thr Lys Ser Lys Glu Gly Val Glu Ile Ile Ile		
	225	230 235 240
Asn Ile Glu Asp Asp Asn Ser Asp Asn Ala Leu Gln Ser Met Glu Lys		
	245	250 255
Asp Phe Ser Arg Leu Arg Thr Ser Lys		
	260	265

<210> 2
 <211> 221
 <212> PRT
 <213> Petunia x hybrida

<220>
 <223> strain: W115

<220>
 <223> tissue type: nectar gland, secretory cell

<220>
 <223> FBP15 amino acid sequence

<400> 2	
Met Gly Arg Gly Lys Ile Glu Ile Lys Arg Ile Glu Asn Thr Thr Asn	
1 5 10 15	
Arg Gln Val Thr Phe Cys Lys Arg Arg Asn Gly Leu Leu Lys Lys Ala	
20 25 30	
Tyr Glu Leu Ser Val Leu Cys Asp Ala Glu Val Ala Leu Ile Val Phe	
35 40 45	
Ser Ser Arg Gly Arg Leu Tyr Glu Tyr Ala Asn Asn Ser Val Lys Ala	
50 55 60	
Thr Ile Asp Arg Tyr Lys Lys Ala Ser Ser Asp Ser Ser Asn Thr Gly	
65 70 75 80	

Ser Thr Ser Glu Ala Asn Thr Gln Phe Tyr Gln Gln Glu Ala Ala Lys
 85 90 95
 Leu Arg Val Gln Ile Gly Asn Leu Gln Asn Ser Asn Arg Asn Met Leu
 100 105 110
 Gly Glu Ser Leu Ser Ser Leu Thr Ala Lys Asp Leu Lys Gly Leu Glu
 115 120 125
 Thr Lys Leu Glu Lys Gly Ile Ser Arg Ile Arg Ser Lys Lys Asn Glu
 130 135 140
 Leu Leu Phe Ala Glu Ile Glu Tyr Met Arg Lys Arg Glu Ile Asp Leu
 145 150 155 160
 His Asn Asn Asn Gln Met Leu Arg Ala Lys Ile Ala Glu Ser Glu Arg
 165 170 175
 Asn Val Asn Met Met Gly Gly Glu Phe Glu Leu Met Gln Ser His Pro
 180 185 190
 Tyr Asp Pro Arg Asp Phe Phe Gln Val Asn Gly Leu Gln His Asn His
 195 200 205
 Gln Tyr Pro Arg Gln Asp Asn Met Ala Leu Gln Leu Val
 210 215 220

<210> 3
 <211> 18
 <212> PRT
 <213> Calluna vulgaris

<220>
 <223> tissue type: flower

<220>
 <223> Calluna vulgaris signal peptide

<400> 3
 Met Phe Leu Pro Ile Leu Phe Thr Ile Ser Leu Leu Phe Ser Ser Ser
 1 5 10 15

His Ala

<210> 4
 <211> 1205
 <212> DNA
 <213> Petunia x hybrida

<220>
 <223> strain: W115

<220>

<223> tissue type: nectar gland

<220>

<223> NEC1

<400> 4

```
tgcgagcggcc gcccgggcag gtattcaaca agagtattca ccacttgaac tcaaaagggg 60
cttcaactaaa aaaaaatcat ggcgcaatta cgtgctgatg acttgtcttt catatttggc 120
cttcttggtta atattgtatc attcatggtc ttcctagcac ccgtgccaac attttacaaa 180
atatataaaa ggaaatcatc agaaggatat caagcaatac catatatggg agcactgttc 240
agcgccggac tattgctata ttatgcttat ctcaggaaga atgcttatct tatcgtcagc 300
attaatggct ttggatgtgc cattgaatta acatatatct ctctgtttct cttttacgcg 360
cccagaaagt ctaagatttt cacagggtgg ctgatgctct tagaattggg agccctagga 420
atgggtgatgc caattactta tttattagca gaaggctcac atagagtgat gatagtggga 480
tggattttgtg cagctatcaa tgttgctgtc tttgctgctc ctttaagcat catgaggcaa 540
gtaataaaaa caaagagtgt agagttcatg cccttcaact tatctttgtt cctcactctc 600
tgtgccacta tgtgggtttt ctatgggttt ttcaagaagg acttttacat tgcgtttcca 660
aatatactgg gctttctatt cggaatcgtt caaatgctat tatattttgt ttacaaggat 720
tcaaagagaa tagatgatga aaaatctgat cctgttcgag aagctacaaa atcaaaagaa 780
gggtgtagaaa tcattatcaa cattgaagat gataattctg ataacgcatt gcagtcctatg 840
gagaaggatt ttccagact gcggacatca aaataagcaa gaagatgatc aaaaaatgac 900
aaagctaagg agtttgaagt aaggcaagga acttgacact gaatatctaa gctaattagc 960
aagactttag cagcttgtaa tatttagtgt ttgtgagggt ttacctata attagcttgt 1020
agcatagcct tcccactaat aattctgctt agcgaatctt atatatggga aatacttaca 1080
ctagtatgca tcttctatat acatgtttgg cacttgacta tacatagaaa aattaacaag 1140
catttctcac ctcaatttgt cacttactta taagtagctg aataatataa tgcaattttc 1200
acccc                                             1205
```

<210> 5

<211> 1157

<212> DNA

<213> Petunia x hybrida

<220>

<223> strain: W115

<220>

<223> tissue type: nectar gland

<220>

<223> cDNA library of nectaries from Petunia hybrida
flowers

<220>

<223> FBP15

<400> 5

```
tctgaataca agctgtgtgt gtagagagat ttcataaaga cagcaaacat cccttctttt 60
tgttctgttt taaaagttcc cttcttcaac cagctctttt cctcatcagg gtaagttgca 120
aataaaagggg atgttccaga atcaagaaga gaagatgtca gactgcctc agaggaagat 180
gggaagagga aagattgaga ttaagaggat tgaaaatata acaaatcgtc aagtcacttt 240
ctgtaagaga agaaatgggt tgcttaaaaa agcttatgaa ctttctgttc tttgtgatgc 300
tgaagttgct ctcatcgttt tctcaagccg tggccgcctc tatgaatatg ctaacaacag 360
tgtgaaggca acaattgata gatataagaa agcatcctca gattcctcca acactggatc 420
tacttctgaa gctaacactc agttttatca acaagaagct gccaaactcc gagttcagat 480
tggttaactta cagaactcaa acaggaacat gctaggcgag tctctaagtt ctctgactgc 540
aaaagatctg aaaggcctgg agaccaaact tgagaaagga attagtagaa ttaggtccaa 600
```



```

taagttcaag attcttacgg gttgacccat taaccattg atcggtgat tataaacaat 1320
aaaacatcac cttcaactat cacatgattt cataagtttg acctaggata ttttatatat 1380
atatatatat atatacacac acacaccatt tccagcgatc ttacctcatt tttattcaaa 1440
ccatttttct gcttcaaaaag tttaaattat taatatgata agtcatccat agtcaaaca 1500
gattttctat actattttgt cccttgtaat tttaaaaaaa aaatgagcga tggtaagata 1560
aacattgttt gcaagtgtac aatttttagta tatgcaaacc aacgcttctt cttccaacta 1620
tcacctaaaa ctacatcatt tatggcgggc ggactagacg tagccaaata taaaaacgca 1680
atggccattc agttcatgtc atttttatat ccttcattca ataattattac tcaaaattga 1740
tgtacagttt ggtctctgat gtgcacttta ctatacgtaa tacggaattt acattataat 1800
taaagagaac tgttccacta aatttttaatg atttaattaa tttaactcgg ttacttgtat 1860
tattattatt gctgtatttg tttgtcattt gaatttggca ccgcagattt ttgtatgcaa 1920
ttaaccctca tatatctttt ggccaaataa agaaaaagtc tgcataatttc ttgccaaaca 1980
tttatcatac ttaccgaat tcttgttttt tgtttctctg ttgttggttct ccactataaa 2040
taacatttgc agtgagtaaa gtttcttcag gtctcttttg tagattcaac aagagtattc 2100
agcacttgaa ctcaaaaggg gcttcactaa aaaaaatcat g 2141

```

<210> 8

<211> 22

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
122

<400> 8

gtgggaaggc tatgctacaa gc

22

<210> 9

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
119

<400> 9

ccttctccat ggactgcaat gcg

23

<210> 10

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
129

<400> 10

gggatccatg gcgcaattac gtgctgatg

29

<210> 11

<211> 24

<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
148

<400> 11
ccaagaaggc caaatatgaa agac

24

<210> 12
<211> 24
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
149

<400> 12
aagtcacag cacgtaattg cgcc

24

<210> 13
<211> 35
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
169

<400> 13
cgctgcagcg ccatggtttt ttttagtgaa gcccc

35

<210> 14
<211> 32
<212> PRT
<213> Calluna vulgaris

<220>

<223> CVH 50 N-terminal sequence

<400> 14

Ser Val Leu Asp Phe Cys Val Ala Asp Pro Ser Leu Pro Asp Gly Pro
1 5 10 15

Ala Gly Tyr Ser Cys Thr Glu Pro Ser Thr Val Thr Ser Gln Asp Phe
20 25 30

<210> 15

<211> 40
<212> PRT
<213> *Calluna vulgaris*

<220>
<223> CVH 29 N-terminal sequence

<400> 15
Ser Val Leu Asp Phe Cys Val Ala Asp Pro Ser Leu Pro Asp Gly Pro
1 5 10 15

Ala Gly Tyr Ser Cys Lys Glu Pro Ala Lys Val Thr Val Asp Asp Phe
20 25 30

Val Phe His Gly Leu Gly Thr Ala
35 40

<210> 16
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer prat
176

<400> 16
gayttytggyg tngcngaycc 20

<210> 17
<211> 20
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer prat
177

<400> 17
ccrtgraana craartcrtc 20

<210> 18
<211> 23
<212> DNA
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: primer prat
207

<400> 18
ggtgacttta gagggctcct tgc 23

<210> 19
<211> 22
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
206

<400> 19
gctccttgca ggagtagcct gc

22

<210> 20
<211> 28
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
247

<400> 20
ggctgcagga gtgttctttg atagaatg

28

<210> 21
<211> 27
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
248

<400> 21
cgccatatgt ttttttatgg aagcccc

27

<210> 22
<211> 70
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
245

<400> 22
tatgttcctt ccaattcttt tcaactatttc tcttcttttc tcttcttctc atgcttctgt 60
tcttgatttc 70

<210> 23
<211> 73
<212> DNA
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
246

<400> 23

gatccgaaat caagaacaga agcatgagaa gaagagaaaa gaagagaaat agtgaaaaga 60
attggaagga aca 73

<210> 24

<211> 35

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
251

<400> 24

gggagctcga gtcgttcaaa catttggcaa taaag 35

<210> 25

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
252

<400> 25

cgaattcccg ggatctagta acatagatga cac 33

<210> 26

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
249

<400> 26

ccggatccat gttacgtcct gtagaaacc 29

<210> 27

<211> 23

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer prat
250

<400> 27

gggagctccc accgaggctg tag

23

<210> 28

<211> 31

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 28

aaggacttta gagagacccg accactgctg g

31

<210> 29

<211> 33

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: primer

<400> 29

aaatgtcttt gatgcataat atttcccata atc

33